

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,321,026 B2
APPLICATION NO. : 09/892613
DATED : January 22, 2008
INVENTOR(S) : Shawn Shui-on Leung

Page 1 of 17

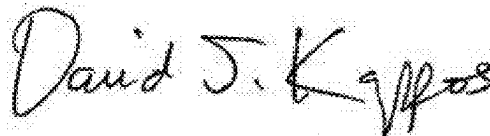
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Please amend SEQ ID NO: 38 and SEQ ID NO: 47 in the Sequence Listing as described below and as they appear in the attached Replacement copy of the Sequence Listing:

In SEQ ID NO: 38, the amino acid in position 5 for the WAS sequence should be a leucine rather than a valine. In SEQ ID NO: 47, the valine at position 5 in the heavy chain should also be a leucine rather than a valine. SEQ ID NO: 2, which appears in the original Sequence Listing submitted with the application on June 27, 2001, has the correct sequence. The errors in the Sequence Listing were typographical in nature, and therefore, correction is respectfully requested.

It is noted that the incorrect Sequence Listing, with only 32 sequences instead of 71, was printed with said Letters Patent. The attached Sequence Listing includes all 71 sequences in addition to the amendment currently requested.

Signed and Sealed this
Eleventh Day of October, 2011

A handwritten signature in black ink, reading "David J. Kappos". The signature is written in a cursive, flowing style with a large initial "D" and a stylized "K".

David J. Kappos
Director of the United States Patent and Trademark Office

SEQUENCE LISTING

<110> Leung, Shawn Shui on

<120> REDUCING IMMUNOGENICITIES OF IMMUNOGLOBULINS BY
FRAMEWORK PATCHING

<130> 655

<140> US 09/892,613

<141> 2001-06-27

<160> 71

<170> PatentIn version 3.3

<210> 1

<211> 369

<212> DNA

<213> Artificial Sequence

<220>

<223> FR patched heavy chain variable region sequence (full DNA
Sequence) formed by joining the N- and C- terminal (SEQ 3 and 6)
halves at the KpnI site.

<220>

<221> V-region

<222> (1)..(369)

<400> 1

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gaaatgcagc tgcaggcgc tggggggagg ttatgcgcgc ctggaggcgc cctggagctc      60
tctctgtcag cctctggatt ctccttcagt atctatgaca tgccttgggt tggccaagca    120
cggggagagg ggttggcgtg gttcgcatac attagtatgt gtagtggtac caactactat    180
ctggacactg tgaaggggcg attaccatc tccagagaca atgcacagaa ctctctgtac    240
ctgcacatga acaactctgg agtgggggac ucaagcttat attactgtgc aagacatagt    300
ggttacggta gtatgcacgg gattttgttt gcttactagg gcccaaggac tctggttcct    360
gtctcttcca                                     369
```

<210> 2

<211> 123

<212> PRT

<213> *Chimera* sp.

<400> 2

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Glu Val Gln Leu Leu Glu Ser Gly Gly Leu Val Gln Pro Gly Gly
1           5           10           15
```

```
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Ser Ile Tyr
20          25          30
```

```
Asp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35          40          45
```

```
Ala Tyr Ile Ser Ser Gly Gly Gly Thr Thr Tyr Pro Asp Thr Val
50          55          60
```

```
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65          70          75          80
```

```
Leu Gln Met Asn Ser Leu Arg Val Glu Asp Thr Ala Leu Tyr Tyr Cys
85          90          95
```

```
Ala Arg His Ser Gly Tyr Ser Ser Tyr Gly Val Leu Phe Ala Tyr
100         105         110
```

```
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115         120
```

<210> 3

<211> 111

<212> DNA

<213> Artificial Sequence

<220>

<223> N-template is a synthetic sense-strand oligonucleotide encoding
amino acids 14-50 of the VII region (SEQ ID No. 2). The template
is PCR-amplified by two primers (SEQ ID No. 4 and 5)

<220>

<221> V-region

<222> (1)..(111)

<400> 3

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cttgaagggc cctctgagct cttctatgca gactctagat tctctttag tctctatgac    60
atctcttggg ttccctccgc accgagaaac gggctagat gggctgata c          111
```

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 3 of 17

<210> 4
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> 5' Primer is a synthetic sense strand oligonucleotide encoding amino acid 1-19 of the VH region (SEQ ID No. 2). The 3' end of the primer overlaps with the 5' end of the template by 18 nucleotides.

<220>
<221> primer_bind
<222> (1)..(57)

<400> 4
gaagtcagc tacctgagc tggggaggg ttatggcagc ctggaggac cctgggg 57

<210> 5
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> 3' Primer is a synthetic anti-sense strand oligonucleotide encoding amino acid 43-54 of the VH region (SEQ ID No. 2). The primer overlaps with the template by 21 nucleotides.

<220>
<221> primer_bind
<222> (1)..(48)

<400> 5
gtaggtaga ccccccacc tactatgta tgcagccac tacagacc 48

<210> 6
<211> 132
<212> DNA
<213> Artificial Sequence

<220>
<223> 6' terminal is a synthetic sense strand oligonucleotide encoding amino acid 68-111 of the VH region (SEQ ID No. 2). The template is PCR-amplified by two primers (SEQ ID No. 7 and 8)

<220>
<221> V region
<222> (1)..(132)

<400> 6
ttaccatctt ccagagacaa tggcagacc tccctgtacc tgcacatgaa cagcttgagg 60
gtagagagaa cagccttata tccctgtgca agacatagta gctacggtag tagctacggg 120
gtttgtttg ct 132

<210> 7
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> 5' Primer is a synthetic sense-strand oligonucleotide encoding amino acid 55-74 of the VH region (SEQ ID No. 2). The 3' end of the primer overlaps with the 5' end of the template by 21 nucleotides.

<220>
<221> primer_bind
<222> (1)..(60)

<400> 7
ggtgatacca cctacatcca aqacatgtg caggagcagat tccactatca cagagacaa 60

<210> 8
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> 3' Primer is a synthetic anti-sense-strand oligonucleotide encoding amino acid 105-125 of the VH region (SEQ ID No. 2). The primer and the template overlaps by 21 nucleotides.

<220>
<221> primer_bind
<222> (1)..(57)

<400> 8
tgagagacca gtagccagag tcccttgacc ccagtaagca caccacacc cgtagct 57

<210> 9
<211> 321
<212> DNA
<213> Artificial Sequence

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 4 of 17

<220>
<221> FR patched light chain variable region sequence formed by joining the N- and C- terminal (SEQ ID No. 11 and 14) halves at the KpnI site.

<220>
<221> V_H region
<222> (1)...(321)

<400> 9
gataccaga tgcacagtc tccatctcc ctgtctgct ctgtggaga cagatccac 60
attagttaa gaaacagta ggcatttag aattattaa actgataca gcagaaacca 120
ggtaagagtc tgaacacct gttctatca actgatatat tccactcagc agtaccatca 180
agttctcagta gaaatgggtc tgcacagta ttctattca ctattgctc ctgtgagcca 240
gaagattttg ccaattactt ttgcaacag ggtatcagc ttctgaggac gttaggtgga 300
ggcaccacag tggaaatcaa a 321

<410> 10
<411> 107
<212> PRT
<213> Chmoera sp.

<400> 10

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Pro Ser Gly
50 55 60

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
100 105

<210> 11
<211> 108
<212> DNA
<213> Artificial Sequence

<220>
<221> M-Template is a synthetic sense-strand oligonucleotide encoding amino acid 11-46 of the VL region (SEQ ID No. 10). The template is PCR-amplified by two primers (SEQ ID No. 12 and 13)

<220>
<221> V_L region
<222> (1)...(108)

<400> 11
ctgtctgctt ctgtggaga cagatccac attagttaa ggcacagta ggcatttagc 60
aattattaa actgataca gcagaaacca gataaggttc cagaactc 108

<410> 12
<411> 51
<212> DNA
<213> Artificial Sequence

<220>
<221> 5' Primer is a synthetic sense-strand oligonucleotide encoding amino acid 1-17 of the VL region (SEQ ID No. 10). The 3' end of the primer overlaps with the 5' end of the template by 21 nucleotides.

<220>
<221> primer_bind
<222> (1)...(51)

<400> 12
gataccaga tgcacagtc tccatctcc ctgtctgct ctgtggaga c 51

<410> 13
<411> 40
<212> DNA
<213> Artificial Sequence

<220>

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 5 of 17

<22> 3' Primer is a synthetic anti-sense-strand oligonucleotide encoding amino acid 40-53. The primer and the template overlaps by 18 nucleotides.

<220>
<221> primer_bind
<222> (1)..(40)

<400> 13
atatacagt gtatgagatc agggatttcg gagacttacc 40

<210> 14
<211> 120
<212> DNA
<213> Artificial Sequence

<220>
<223> C-terminal is a synthetic sense strand oligonucleotide encoding amino acid 59-98 of the VH region (SEQ ID No 10). The template is PCR-amplified by two primers (SEQ ID No 15 and 16)

<220>
<221> V_region
<222> (1)..(120)

<400> 14
ccatcaggtt tcatgtgcag tgggtctgga acagacttta ctctccactc tagctccctg 60
cagccagaaq atttgcacc ttacttttgc caacagggtc atactcttc gtggacgttc 120

<210> 15
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> 5' Primer is a synthetic sense strand oligonucleotide encoding amino acid 50-65 of the VH region (SEQ ID No. 10). The 3' end of the primer overlaps with the 5' end of the template by 21 nucleotides

<220>
<221> primer_bind
<222> (1)..(49)

<400> 15
ctcacatagt atatacact caggagtcca atcaagttc agtggcagt 49

<210> 16
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> 3' Primer is a synthetic anti sense strand oligonucleotide encoding amino acid 92-107 of the VH region (SEQ ID No 10). The primer and the template overlaps by 21 nucleotides.

<220>
<221> primer_bind
<222> (1)..(48)

<400> 16
tttgatttcc acctgtgtgc ctctaccgaa cgtccacgga agtgtatt 48

<210> 17
<211> 371
<212> DNA
<213> Artificial Sequence

<220>
<223> 18 patched heavy chain variable region sequence (Full DNA Sequence) formed by joining the N- and C-terminal (SEQ 19 and 22) halves at the KpnI site.

<220>
<221> V_region
<222> (1)..(371)

<400> 17
cagggtcaac tggtagcttc cggggctgag gtaataaac ctggagcttc agtgaaagtc 60
tactgcaagg atttcagcta cacttttacc agttacaata tgcactgggt acggcagact 120
cctggagagg gactggagtg gattggagct attttcttca gaaatggtag taactattac 180
aacagagaa tcaagggtta gggccacttg actgcagaca aatctctcag caaaccttac 240
atgcagctca acaattctga atctggagac tctaaagttc attactatgc aagatcgac 300
tacaatagta actacgaga ctactttaac tactggagac aagacaccac tgtacagtc 360
tactctaatc a 371

<210> 18
<211> 123

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 6 of 17

<212> PRT
 <213> Chimera sp.
 <400> 18
 Gln Val Gln Leu Val Ala Ser Gly Ala Glu Val Asn Lys Pro Gly Ala
 1 5 10 15
 Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
 20 25 30
 Asn Met His Trp Val Arg Gln Pro Pro Gly Arg Gly Leu Glu Trp Ile
 35 40 45
 Gly Ala Ile Tyr Pro Gly Asn Gly Asp Thr Ser Tyr Asn Gln Lys Phe
 50 55 60
 Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
 65 70 75 80
 Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
 85 90 95
 Ala Arg Ser His Tyr Gly Ser Asn Tyr Val Asp Tyr Phe Asp Tyr Trp
 100 105 110
 Gly Gln Gly Thr Thr Val Thr Val Ser Ser Asp
 115 120
 <210> 19
 <211> 114
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> N template is a synthetic sense strand oligonucleotide encoding
 amino acids 12-49 of the VH region (SEQ ID No. 18). The template
 is PCR-amplified by two primers (SEQ ID No. 20 and 21)
 <220>
 <221> V region
 <222> (1)..(114)
 <400> 19
 aatagaactg gggactcagt gaagctctcc tgcacggcct ctagctctcc attaccagt 60
 taacaatgac actgggtacg gcagactcct ggaaggagca tggcatggat tggg 114
 <210> 20
 <211> 57
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> 5' Primer is a synthetic sense strand oligonucleotide encoding
 amino acid 1-19 of the VH region (SEQ ID No. 18). The 3' end of
 the primer overlaps with the 5' end of the template by 24
 nucleotides.
 <220>
 <221> primer_bind
 <222> (1)..(57)
 <400> 20
 caggtgcac tgggtgttc cggggctgag gtaaatgac ctggggcct agtgcag 57
 <210> 21
 <211> 55
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> 3' Primer is a synthetic anti sense strand oligonucleotide
 encoding amino acid 43-60 of the VH region (SEQ ID No. 18). The
 primer and the template overlaps by 21 nucleotides.
 <220>
 <221> primer_bind
 <222> (1)..(55)
 <400> 21
 tgaactagt atcaaatctt cctggataaa tagctcaat caattccagg cccct 55
 <210> 22
 <211> 126
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> C-terminal is a synthetic sense strand oligonucleotide encoding
 amino acid 70-111 of the VH region (SEQ ID No. 18). The template is
 PCR-amplified by two primers (SEQ ID No. 23 and 24)

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 7 of 17

```
<220>
<221> V_region
<222> (1)..(126)

<400> 22
ttgactgcag acaaatctc cagccagcc taatgcagc tgcagctt gacatctgag 60
gaactctcag tatattctg tgcacacag cactacagta gtaactcagt aqatcattt 120
gactatc 126

<210> 23
<211> 61
<212> DNA
<213> Artificial Sequence

<220>
<223> 5' Primer is a synthetic sense strand oligonucleotide encoding
        amino acid 57-76 of the VH region (SEQ ID No 18). The 3' end of
        the primer overlaps with the 5' end of the template by 21
        nucleotides.

<220>
<221> primer_bind
<222> (1)..(61)

<400> 23
tgatctagt tcaatcaga actcaaggc caagccaca ttgactgcag acaaatctc 60
c 61

<210> 24
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> 3' Primer is a synthetic anti sense strand oligonucleotide
        encoding amino acid 195-121 of the VH region (SEQ ID No 18). The
        primer and the template overlaps by 21 nucleotides.

<220>
<221> primer_bind
<222> (1)..(59)

<400> 24
tgatcagagg agactgaac agtggatgct tggccctagt agtcaagta gtctacgta 59

<210> 25
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> IR-patched light chain variable region sequence (Full DNA
        Sequence) formed by joining the N- and C- terminal (SEQ 27 and
        30) halves at the BspEI site.

<220>
<221> V_region
<222> (1)..(321)

<400> 25
gatattcaac tcaacagtc tcaatcaagt ctctctgat ctgtggaggc cagagtcaca 60
atcacttgcg aggcagctc aagtttaagt ttcatgact ggtaccagca gaagccagga 120
tctctcccca aactctgat ttatgcaca tcaaacctgg ctccagggt cctcagtcgc 180
ttcagtgaga gtgggtctgg gacagagttc actctacaa tcaagcgttt gcagcctgaa 240
gatttagcca ctctattctg cctcagtgag agtagtaaac cgtctcagtt cagtgctggg 300
accagctga cgtttcaag g 321

<210> 26
<211> 187
<212> PRT
<213> Chinamen sp.

<400> 26
Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Ser Ser Leu Ser Phe Met
20 25 30

His Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Tyr
35 40 45

Ala Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser
50 55 60
```

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 8 of 17

Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu
65 70 75 80

Asp Phe Ala Thr Tyr Phe Cys His Gln Trp Ser Ser Asn Pro Leu Thr
85 90 95

Phe Gly Ala Gly Thr Lys Leu Thr Val Leu Arg
100 105

<210> 27
<211> 129
<212> DNA
<213> Artificial Sequence

<220>
<221> N template is a synthetic sense-strand oligonucleotide encoding
amino acids 9-51 of the VL region (SEQ ID No. 26). The template
is PCR amplified by two primers (SEQ ID No. 28 and 29)

<220>
<221> V region
<222> (1)...(129)

<400> 27
tcaagtcctt ctgcatctgt gagggcaga gtcaaatc cttgcagggc caetccagt 60
ttaagttcca tgcactgga ccagcagag ccagggtccc cccccaacc ctgatttat 120
gccacatcc 129

<210> 28
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<221> 5' Primer is a synthetic sense strand oligonucleotide encoding
amino acid 1-15 of the VH region (SEQ ID No 26). The 3' end of
the primer overlaps with the 5' end of the template by 21
nucleotides.

<220>
<221> primer bind
<222> (1)...(45)

<400> 28
gatattcac tcaacagtc ccatcaagt ctctctgca ctgtg 45

<210> 29
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<221> 3' Primer is a synthetic anti sense strand oligonucleotide
encoding amino acid 45-57. The primer and the template overlaps
by 21 nucleotides.

<220>
<221> primer bind
<222> (1)...(40)

<400> 29
ggatttcaga agccagatg gattgggat aactccaga 40

<210> 30
<211> 120
<212> DNA
<213> Artificial Sequence

<220>
<221> C-terminal is a synthetic sense-strand oligonucleotide encoding
amino acid 61-100 of the VII region (SEQ ID No 26) the template is
PCR-amplified by two primers (SEQ ID No 31 and 32)

<220>
<221> V region
<222> (1)...(120)

<400> 30
ttcagtaaca atgagtttag gacagagtc acctccaa tcaagatll gcagctgaa 60
gatttcacca ctctcttctg ccttcagag gctgaagac cgtcacgtt cgtgctagg 120

<210> 31
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<221> 5' Primer is a synthetic sense strand oligonucleotide encoding
amino acid 54-67 of the VII region (SEQ ID No 18). The 3' end of
the primer overlaps with the 5' end of the template by 21
nucleotides.

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 9 of 17

<220>
<221> primer_bind
<222> (1)..(43)

<400> 31
ggatttcagg gtccttagtc gcttcagtagg cagtaggctt ggg 43

<210> 32
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> 3' Primer is a synthetic anti-sense-strand oligonucleotide
encoding amino acid 94-107 of the Vh region (SEQ ID No 26). The
primer and the template overlaps by 21 nucleotides.

<220>
<221> primer_bind
<222> (1)..(42)

<400> 32
ccytgagcgg gtccagcttgg tccagcact gaaactgagc gg 42

<210> 33
<211> 123
<212> PRT
<213> Antibody

<400> 33
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
1 5 10 15
Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser Ile Tyr
20 25 30
Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
35 40 45
Ala Tyr Ile Ser Ser Gly Gly Gly Thr Thr Tyr Tyr Pro Asp Thr Val
50 55 60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65 70 75 80
Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
85 90 95
Ala Arg His Ser Gly Tyr Gly Ser Ser Tyr Gly Val Leu Phe Ala Tyr
100 105 110
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala
115 120

<210> 34
<211> 107
<212> PRT
<213> Antibody

<400> 34
Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15
Asp Arg Val Thr Ile Ser Lys Arg Ala Ser Gln Asp Ile Ser Asn Tyr
20 25 30
Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45
Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60
Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln
65 70 75 80
Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp
85 90 95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105

<210> 35
<211> 123
<212> PRT

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 10 of 17

<213> Immunoglobulin

<400> 35

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser Ile Tyr
20 25 30

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
35 40 45

Ala Tyr Ile Ser Ser Gly Gly Gly Thr Thr Tyr Tyr Pro Asp Thr Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65 70 75 80

Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
85 90 95

Ala Arg His Ser Gly Tyr Gly Ser Ser Tyr Gly Val Leu Phe Ala Tyr
100 105 110

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala
115 120

<210> 36

<211> 29

<212> PKT

<213> Immunoglobulin

<400> 36

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Pro Gly Gly Ser
1 5 10 15

Leu Arg Leu Ser Cys Ala Thr Thr Gly Phe Ala Phe Ser
20 25

<210> 37

<211> 30

<212> PKT

<213> Immunoglobulin

<400> 37

Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Ser
20 25 30

<210> 38

<211> 30

<212> PKT

<213> Immunoglobulin

<400> 38

Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Ser
20 25 30

<210> 39

<211> 14

<212> PKI

<213> Immunoglobulin

<400> 39

Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala
1 5 10

<210> 40

<211> 32

<212> PRT

<213> Immunoglobulin

<400> 40

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Arg Val Glu Asp Thr Ala Leu Tyr Tyr Cys Ala Arg
20 25 30

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 11 of 17

<210> 41
<211> 11
<212> PRT
<213> Immunoglobulin

<400> 41

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Thr
1 5 10

<210> 42
<211> 107
<212> PRT
<213> Immunoglobulin

<400> 42

Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln
65 70 75 80

Glu Asp Phe Ala Thr Tyr Phe Lys Gln Gln Gly Asn Thr Leu Pro Trp
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105

<210> 43
<211> 23
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<213> Immunoglobulin

<400> 43

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Lys
20

<210> 44
<211> 15
<212> PRT
<213> Immunoglobulin

<400> 44

Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr
1 5 10 15

<210> 45
<211> 42
<212> PRT
<213> Immunoglobulin

<400> 45

Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr
1 5 10 15

Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Phe Lys
20 25 30

<210> 46
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<212> PRT
<213> Immunoglobulin

<400> 46

Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
1 5 10

<210> 47
<211> 123
<212> PRT
<213> Immunoglobulin

<400> 47

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 12 of 17

Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Ser Ile Tyr
 20 25 30

Asp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Tyr Ile Ser Ser Gly Gly Gly Thr Thr Tyr Tyr Pro Asp Thr Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Val Glu Asp Thr Ala Leu Tyr Tyr Cys
 85 90 95

Ala Arg His Ser Gly Tyr Gly Ser Ser Tyr Gly Val Leu Phe Ala Tyr
 100 105 110

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 115 120

<210> 48
 <211> 107
 <212> PRT
 <213> Immunoglobulin

<400> 48

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1 5 10 15

Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Ser Asn Tyr
 20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp
 85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
 100 105

<210> 49
 <211> 123
 <212> PRT
 <213> Immunoglobulin

<400> 49

Gln Val Gln Leu Arg Gln Pro Gly Ala Glu Leu Val Lys Pro Gly Ala
 1 5 10 15

Ser Val Lys Met Ser Lys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
 20 25 30

Asn Met His Trp Val Lys Gln Thr Pro Gly Gln Gly Leu Glu Trp Ile
 35 40 45

Gly Ala Ile Tyr Pro Gly Asn Gly Asp Thr Ser Tyr Asn Gln Lys Phe
 50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Thr Ala Tyr
 65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
 85 90 95

Ala Arg Ser His Tyr Gly Ser Asn Tyr Val Asp Tyr Phe Asp Tyr Trp
 100 105 110

Gly Gln Gly Thr Thr Leu Thr Val Ser Ser Asp
 115 120

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 13 of 17

<210> 50
<211> 137
<212> PRT
<213> Immunoglobulin

<400> 50

Gln Ile Val Leu Ser Gln Ser Pro Ala Ile Leu Ser Ala Ser Pro Gly
1 5 10 15

Glu Lys Val Thr Met Thr Cys Arg Ala Ser Ser Ser Leu Ser Phe Met
20 25 30

His Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Tyr
35 40 45

Ala Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Val Glu Ala Glu
65 70 75 80

Asp Ala Ala Thr Tyr Phe Cys His Gln Trp Ser Ser Asn Pro Leu Thr
85 90 95

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
100 105

<210> 51
<211> 123
<212> PRT
<213> Immunoglobulin

<400> 51

Gln Val Gln Leu Arg Gln Pro Gly Ala Glu Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Asn Met His Trp Val Lys Gln Thr Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Ala Ile Tyr Pro Gly Asn Gly Asp Thr Ser Tyr Asn Gln Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser His Tyr Gly Ser Asn Tyr Val Asp Tyr Phe Asp Tyr Trp
100 105 110

Gly Gln Gly Thr Thr Leu Thr Val Ser Ser Asp
115 120

<210> 52
<211> 30
<212> PRT
<213> Immunoglobulin

<400> 52

Gln Val Gln Leu Val Ala Ser Gly Ala Glu Val Asn Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr
20 25 30

<210> 53
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<212> PRT
<213> Immunoglobulin

<400> 53

Trp Val Arg Gln Pro Pro Gly Arg Gly Leu Glu Trp Ile Gly
1 5 10

<210> 54
<211> 32
<212> PRT
<213> Immunoglobulin

<400> 54

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 14 of 17

Arg Val Thr Ile Thr Ala Asp Lys Ser Thr Ser Thr Ala Tyr Met Glu
1 5 10 15

Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 55
<211> 42
<212> PRT
<213> Immunoglobulin

<400> 55

Arg Ala Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu Asn
1 5 10 15

Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Cys Cys Ala Arg
20 25 30

<210> 56
<211> 11
<212> PRT
<213> Immunoglobulin

<400> 56

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
1 5 10

<210> 57
<211> 187
<212> PRT
<213> Immunoglobulin

<400> 57

Gln Ile Val Leu Ser Gln Ser Pro Ala Ile Leu Ser Ala Ser Pro Gly
1 5 10 15

Glu Lys Val Thr Met Thr Cys Arg Ala Ser Ser Ser Leu Ser Phe Met
20 25 30

His Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Tyr
35 40 45

Ala Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Val Glu Ala Glu
65 70 75 80

Asp Ala Ala Thr Tyr Phe Cys His Gln Trp Ser Ser Asn Pro Leu Thr
85 90 95

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
100 105

<210> 58
<211> 71
<212> PRT
<213> Immunoglobulin

<400> 58

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys
20

<210> 59
<211> 22
<212> PRT
<213> Immunoglobulin

<400> 59

Asn Leu Met Leu Ile Gln Pro Pro Ser Val Ser Glu Ser Pro Gly Lys
1 5 10 15

Thr Val Thr Met Thr Cys
20

<210> 60
<211> 15
<212> PRT
<213> Immunoglobulin

<400> 60

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 15 of 17

Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Pro Val Ile Tyr
1 5 10 15

<210> 61
<211> 32
<212> PRT
<213> Immunoglobulin

<400> 61

Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr
1 5 10 15

Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Phe Cys
20 25 30

<210> 62
<211> 32
<212> PRT
<213> Immunoglobulin

<400> 62

Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
1 5 10 15

Leu Thr Ile Thr Ser Leu Gln Pro Glu Asp Phe Ala Ala Tyr Phe Cys
20 25 30

<210> 63
<211> 32
<212> PRT
<213> Immunoglobulin

<400> 63

Gly Val Pro Ser Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Phe
1 5 10 15

Leu Thr Ile Ser Ser Leu Arg Pro Glu Asp Val Ala Thr Tyr Phe Cys
20 25 30

<210> 64
<211> 32
<212> PRT
<213> Immunoglobulin

<400> 64

Gly Val Pro Ala Arg Phe Ser Gly Tyr Asn Ser Gly Asn Ser Ala Phe
1 5 10 15

Leu Thr Ile Asn Arg Val Glu Ala Gly Asp Glu Ala Asp Tyr Phe Cys
20 25 30

<210> 65
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<212> PRT
<213> Immunoglobulin

<400> 65

Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
1 5 10

<210> 66
<211> 11
<212> PRT
<213> Immunoglobulin

<400> 66

Phe Gly Val Gly Ser Lys Val Glu Ser Lys Arg
1 5 10

<210> 67
<211> 11
<212> PRT
<213> Immunoglobulin

<400> 67

Phe Gly Ala Gly Thr Lys Leu Thr Val Leu Arg
1 5 10

<210> 68
<211> 122
<212> PRT
<213> Immunoglobulin

<400> 68

Gln Val Gln Leu Val Ala Ser Gly Ala Glu Val Asn Lys Pro Gly Ala

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 16 of 17

1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Asn Met His Trp Val Arg Gln Pro Pro Gly Arg Gly Leu Glu Trp Ile
35 40 45

Gly Ala Ile Tyr Pro Gly Asn Gly Asp Thr Ser Tyr Asn Gln Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser His Tyr Gly Ser Asn Tyr Val Asp Tyr Phe Asp Tyr Trp
100 105 110

Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120

<210> 69
<211> 107
<212> PRT
<213> Immunoglobulin

<400> 69

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Ser Ser Leu Ser Phe Met
20 25 30

His Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Tyr
35 40 45

Ala Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu
65 70 75 80

Asp Phe Ala Thr Tyr Phe Cys His Gln Trp Ser Ser Asn Pro Leu Thr
85 90 95

Phe Gly Ala Gly Thr Lys Leu Thr Val Leu Arg
100 105

<210> 70
<211> 122
<212> PRT
<213> Immunoglobulin

<400> 70

Gln Val Gln Leu Val Ala Ser Gly Ala Glu Val Asn Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Asn Met His Trp Val Arg Gln Pro Pro Gly Arg Gly Leu Glu Trp Ile
35 40 45

Gly Ala Ile Tyr Pro Gly Asn Gly Asp Thr Ser Tyr Asn Gln Lys Phe
50 55 60

Lys Gly Arg Val Thr Ile Thr Ala Asp Lys Ser Thr Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ser His Tyr Gly Ser Asn Tyr Val Asp Tyr Phe Asp Tyr Trp
100 105 110

Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120

<210> 71

CERTIFICATE OF CORRECTION (continued)
U.S. Pat. No. 7,321,026 B2

Page 17 of 17

<211> 187

<212> PRT

<213> Immunoglobulin

<400> 71

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Ser Ser Leu Ser Phe Met
20 25 30

His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Pro Val Ile Tyr
35 40 45

Ala Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu
65 70 75 80

Asp Phe Ala Thr Tyr Phe Cys His Gln Trp Ser Ser Asn Pro Leu Thr
85 90 95

Phe Gly Ala Gly Thr Lys Leu Thr Val Leu Arg
100 105